

What is claimed is:

1. An optical device for combining a light beam and at least one further light beam, wherein provision is made for a means for splitting a first reference beam from the light beam and a further first reference beam from the further light beam, as well as a further means for splitting a second reference beam from the light beam and a further second reference beam from the further light beam; the reference beams being detectable by a position detector, and the propagation direction and/or the position of the light beam and/or of the further light beam being adjustable as a function of the detected positions.
2. The device as recited in Claim 1, wherein the light beam and the further light beam have different wavelengths.
3. The device as recited in Claim 1, wherein the means for splitting off a first reference beam is a first interface, and the further means for splitting off the second reference beam is a second interface.
4. The device as recited in one of the Claims 1 through 3, wherein the device contains at least one dispersive element.
5. The device as recited in Claim 4, wherein the dispersive element contains a prism, a grating, or an acousto-optical element.
6. The device as recited in one of the Claims 1 through 5, wherein the splitting means and the further splitting means are parts of the same optical component.
7. The device as recited in Claim 6, wherein the same optical component contains the dispersive element.

8. The device as recited in one of the Claims 1 through 7,
wherein the propagation direction and/or the position of the first and the further light beam can be
adjusted independently of each other.
9. The device as recited in Claim 1,
wherein control elements are provided for adjusting the propagation direction and/or the position
of the light beam and/or of the further light beam.
10. The device as recited in Claim 9,
wherein the control elements are tilting mirrors.
11. The device as recited in one of the Claims 9 or 10,
wherein the control elements can be driven as a function of the detected positions.
12. The device as recited in one of the Claims 9 through 11,
wherein the control elements are placed upstream of the means for splitting off a first reference
beam.
13. The device as recited in one of the Claims 3 through 12,
wherein the angle of incidence at which the light beam and/or the further light beam strike the
first interface is adjustable.
14. The device as recited in one of the Claims 3 through 13,
wherein the location at which the light beam and/or the further light beam strike the first interface
is adjustable.
15. The device as recited in Claim 1,
wherein the position detector is a CCD detector.
16. The device as recited in Claim 1,

wherein the reference beams can be detected together by one position detector.

17. The device as recited in Claim 1,
wherein the reference beams are detectable simultaneously.

18. The device as recited in one of the Claims 1 through 17,
wherein the position detector can be calibrated for different detectable positions.

19. The device as recited in one of the Claims 1 through 18,
characterized by the use for generating an illuminating light beam for a scanning microscope.

20. A scanning microscope comprising a device according to one of the Claims 1 through
19.